UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,218	09/16/2004	Tiziano Tanaglia	258809US0XPCT	3414

22850 7590 01/04/2007

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
NUTTER, NATHAN M	
ART UNIT	PAPER NUMBER
1711	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/507,218	TANAGLIA ET AL.	
	Examiner	Art Unit	
	Nathan M. Nutter	1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

The requirement for election of species in the Office action of 22 September 2006, is hereby expressly withdrawn in view of the prior art found.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation in claim 1 at lines 16 and 17 of "its derivatives" is not clear as to the proper metes and bounds thereof. What "derivatives" may be employed has not been shown. The term is deemed to embrace molecular structures, as well as macromolecular and polymeric structures. Further, the recitation is not a proper alternative expression, as required.

Claims 1-16 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for maleic anhydride, does not reasonably provide enablement for <u>any</u> type of maleic anhydride derivative. The specification does not

enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make any use the invention commensurate in scope with these claims.

Case law holds that applicant's specification must be "commensurately enabling [regarding the scope of the claims]." See *Ex Parte Kung*, 17 USPQ2d 1545, 1547 (Bd. Pat. Appl. Inter. 1990). Otherwise **undue experimentation** would be involved in determining how to practice and use applicant's invention. The test for undue experimentation as to whether or not all compounds within the scope of claims 1-16 can be used as claimed and whether claims 1-16 meet the test is stated in *Ex parte Forman*, 230 USPQ 546, 547 (Bd. Pat. Appl. Inter. 1986) and *In re Wands*, 8 USPQ2d 1400 (Fed. Cir. 1988). Upon applying this test to claims 1-16, it is believed that undue experimentation **would** be required because:

(a) *The quantity of experimentation necessary* is **great** since claims 1-16 read on any type of maleic anhydride derivative such as salts, oligomers, polymers, conjugates, etc..

(b) There is **no** *direction or guidance presented* for making maleic anhydride derivatives.

(c) There is an **absence** *of working examples* concerning making maleic anhydride derivatives comprising any type of oligomers, polymers or conjugates.

In light of the above factors, it is seen that undue experimentation would be necessary to make and use the invention of claims 1-16.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the

unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of copending Application No. 11/294,569 (US 2006/0135697), Tanaglia. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the copending application show the steps and constituents, as recited herein. The recitation of "polyfunctional vinyl monomers" is deemed to embrace maleic anhydride, as recited herein.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-16 areprovisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application

No. 11/100,522 (US 2005/0239666), Tanaglia. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the copending application show the steps and constituents, as recited herein. The recitation of "polyfunctional vinyl monomers" is deemed to embrace maleic anhydride, as recited herein.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-8 and 10-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Scheibelhoffer et al (US 5,122,569), newly cited.

The patent to Sheibelhoffer et al shows the manufacture of a functionalized copolymer that may comprise elastomers of either ethylene/propylene or ethylene/propylene/non-conjugated dienes, with shear treatment in the presence of a hydroperoxide and maleic anhydride, as recited herein. Note column 5 (lines 15-68) for the elastomers, column 6 (lines 20-39) for the functionalizing agent, maleic anhydride, the paragraph bridging column 6 to column 7 for the hydroperoxides of claims 10, 11 and 12, xcolumn 7 (lines 8-33) for the reaction temperatures, as in claims 15 and 16, and the shear rates, as recited in claims 1 and 2. Finally, note the Examples. The molar ratios of ethylene, propylene and the diene constituent are shown at column 5 (lines 51 et seq.).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-12, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tse et al (US 2003/0013623), taken in view of Foulger et al (US 6,569,937), all newly cited.

The reference to Tse et al teaches a method for the functionalization of ethylene/propylene or ethylene/propylene/non-conjugated diene elastomers, having monomer contents embracing those recited and claimed herein, in the presence of a hydroperoxide and shear force, with maleic anhydride. Note paragraphs [0045]-[0051] for the monomers and their respective contents of claims 3, 4, 5 and 8. Since paragraph [0052] shows a Mn of from 10,000-12,000,000, and paragraph [0057] teaches a Mw/Mn of "less than about 2," the Mw would surely embrace that recited in instant claims 1 and 7. Note paragraph [0109] for the mechanical shear applied. Paragraph [0115] teaches why one of ordinary skill in the art would know to manipulate time, temperature and RPM for the reaction. The functionalizing agent is taught as maleic anhydride at paragraph [0118], employed with hydroperoxides, as claimed herein. The contemplated temperatures are shown at paragraph [0119]. The reference teaches the use of Banbury mixers at paragraphs [0113], [0117], et al.

The reference to Foulger et al shows a shear rate produced by Banbury mixers at column 15 (lines 44 et seq.) to be "72 RPM (200 s^{-1} shear rate)." Given the teachings of manipulation of time, temperature and RPM as taught by the reference to Tse et al, the use of any particular shear rate would be prima facie obvious to an artisan of ordinary skill. Nothing unexpected has been shown, nor can be seen in the claimed invention.

Claims 1, 3-9, 11, 12, 15 and 16 are rejected under 35 U.S.C. 103(a) as obvious over Schauder (US 6,383,439), taken in view of Ooyama et al (US 6,060,551), both newly cited.

The reference to Schauder teaches the chemical modification of ethylene/propylene or ethylene/propylene/non-conjugated diene elastomers with maleic anhydride in the presence of a hydroperoxide under shear as herein recited and claimed. Note column 1 (line 47) to column 2 (line 7). The Mw for the first copolymer of 10,000 to 500,000, with a MWD of "from 2 to 6.5" would include the claimed range. Likewise, for the EPDM, the claimed range would be embraced. Note column 2 (lines 45 et seq.) for the particular monmer contents, as recited in claims 1, 3, 4, 5 and 6. The diene constituent is taught at column 3 (lines 9-25) and includes those of claims 8 and 9. Note column 3 (lines 29-53) for the process which may employ a twin screw extruder. Note column 3 (lines 54-62) for the use of butylcumylperoxide which fulfills the definition of a hydroperoxide as being of the structure, ROOH. The paragraph bridging column 3 to column 4 teaches the use of maleic anhydride. Finally, note Example 1 at column 7 for the use of the twin screw extruder with an RPM of 200, and the temperatures as herein recited.

The reference to Ooyama et al teaches the shear rate of a twin screw extruder at column 6 (lines 39 et seq.) to have a shear rate of "not less than 500 second^{-1}" embracing that recited herein. As such, the reference shows the shear rate. Employment of the shear rate of Ooyama et al in the process as set out in Schauder

would have been prima facie obvious to a skilled artisan. Nothing unexpected or surprising can be seen herein.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan M. Nutter whose telephone number is 571-272-1076. The examiner can normally be reached on 9:30 a.m.-6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nathan M. Nutter
Primary Examiner
Art Unit 1711

nmn

28 December 2006